

ROADWAY SAFETY

I. PROGRAM OVERVIEW

The Roadway Safety program focuses on the operating environment. Grant funds provide necessary equipment and facilities to aid in the identification and analysis of critical locations, the recommendation of traffic safety enhancements and the improvement of the traffic flow to ensure that responsible agencies have the technical expertise to perform necessary analyses. Roadway design, construction, and maintenance are not permissible under the Office of Traffic Safety (OTS) grant program.

OTS has continued the “Work Zone Safety Training” program. Utilizing this program, trainers are sent to locations throughout the state to provide two-day training sessions that instruct roadway maintenance and construction personnel on the latest methodology for enhancing the safety of workers and motorists in those areas receiving maintenance or which are under construction. The program is utilized extensively by many local agencies, public utility companies, and private firms. The Federal Highway Administration (FHWA) has specifically encouraged continuation of the program. Generally, this program is renewed every three years. The continuous turnover of highway construction and maintenance personnel assures a continuing need for this education program. Continuation of the program ensures that suitable training is available to enhance roadway safety through construction and maintenance zones.

A sound traffic-engineering program utilizes collision location data, an inventory of traffic control devices, data on the numbers and types of driving lanes, average and peak hour traffic volumes, and data on the direction of travel. In addition, a cogent traffic-engineering program should also include traffic circulation pattern information and data on adjacent land use. There should also be an ability to identify and analyze critical collision locations to establish reasonable speed limits (85th percentile), to coordinate and optimize signal timing, and to correlate all of the referenced data with the types and severity of collisions experienced. The engineer must perform analyses and recommend mitigation in the way of traffic controls, roadway design changes, alternative routes, and non-engineering (enforcement) improvements. As recommended by the California Traffic Records Assessment, conducted in September 2005, OTS is providing funds to local agencies to provide technical resources to local engineering agencies to support the collection of highway features and location reference data and to collect traffic count data on a consistent and periodic schedule.

In some instances, increased tort liability actions are a motivating factor responsible for compelling agencies to improve their engineering analysis capabilities. Consequently, the nature of traffic engineering efforts must be proactive. In addition, complete traffic engineering efforts must offer long-term mitigation to identified conditions.

II. ACTION PLANS

Traffic Control Device Inventory (TCDI)

This activity involves establishing a relational database for the storage and retrieval of various control device data elements. Agencies must perform a complete field inventory of existing signs, signals, pavement and curb markings and stripping as well as the condition of each. Depending upon the size and complexity of the street layout table, some inventories

may exclude certain items, such as pavement and curb stripping, and may keep separate inventories for some items, such as signals.

Traffic Counts

This activity typically involves the purchase of traffic counting devices including radar trailers and the development of a schedule for their periodic and regular deployment. Depending on the sophistication of the count devices and the agency, traffic counts may also include the incorporation and the development of traffic flow pattern charts to illustrate relative traffic volumes. Traffic counts should also include average daily traffic (ADT) and peak hour volume counts.

Identification and Surveillance

This process allows for the systematic identification and ranking of critical or high collision locations within the jurisdiction and for performing analyses to discover conditions that may be contributing to the high collision rates. Software applications frequently include the generation of collision diagrams with Primary Collision Factors (PCF) identified. Applications may also include such functions as traffic flow analyses, traffic circulation patterns, and the statistical correlation of conditions present at the time of the collisions e.g., weather, time of day etc. In more sophisticated systems, collision locations can be identified as mid-block or intersection.

Bicycle and Pedestrian Safety

In this activity, there is commonly one point of focus, either on bicycle safety or pedestrian safety. Bicycle safety typically involves analyzing bicycle collisions and bicycle travel patterns to determine the relative benefits of including bicycle lanes, special signage or the prohibition of bicycles from certain roadways. Pedestrian safety is addressed through analyses to determine the probable benefits from the installation of signalized pedestrian crosswalks. Related to the latter, mitigation is the on-going evaluation of a recently developed device that enables pedestrians to alert motorists to their presence. The alert is achieved via In-Roadway Warning Lights (IRWL's) LED lights. The California Traffic Control Device Committee (CTCDC) and the California Department of Transportation (Caltrans) have developed standards for these devices making them available to cities and counties in a non-experimental capacity throughout the state via OTS grant process.

Many engineering and enforcement agencies are still employing the use of manual collision and citation tracking systems or are forced to use unwieldy legacy data systems. Extracting meaningful data through either practice is an arduous and inefficient undertaking and the resulting data may be unreliable. For instance, jurisdictions that share a common boundary may find that crashes on the boundary roadways are undercounted (counted by the wrong agency) or double-counted (by multiple agencies). Either way, the data integrity is compromised. In addition, neither a manual system nor legacy system provides a viable and efficient means for communicating captured data on either an intra-agency or inter-agency level. This inability to share data results in the perpetuation of separate engineering and enforcement data systems in these jurisdictions

By developing modern open data systems that are usable by both traffic engineering and enforcement within a city and/or across jurisdictional lines i.e., county-to- county, OTS is providing an opportunity to enhance not only data sharing but overall communication and agency efficiency.

Geographical Information System (GIS)

These systems involve extensive use of sophisticated and powerful software and hardware. Most applications locate data (collisions, citations, signage) by a unique geographical identifier (geocoding), usually points of longitude and latitude and employ software such as AutoCAD or ArcView. GIS incorporates the use of a wide variety city/county relevant of data layers though many of the developed layers may be unrelated to traffic (such as census tracts, tax parcels, sewer lines, etc.); typically GIS will employ the use of global positioning satellite (GPS) transceivers. GPS technology directs signals to low orbit global satellites where the signal is then triangulated to a unique (specific) location on the earth's surface. Depending on the complexity of the community, the local funds the agency is willing to commit and the proposed uses of the systems, GIS offers a flexible and appropriate solution for a variety of identified traffic mitigation programs. OTS has assisted many jurisdictions throughout the state in implementing Geographic Information Systems applications. Numerous cities and counties throughout the state have implemented GIS in their jurisdiction and many more are in the process of implementing GIS programs for their agency.

During this fiscal year, OTS intends to continue grants involving Geographic Information Systems. In a planned effort, OTS intends to automate manual processes and replace legacy data systems that are no longer efficient or effective. OTS will promote implementation of these systems on a county level and on a city level in the "wired" counties.

Training and Review

The Safety Through Construction and Maintenance Zones and the Engineering and Enforcement (E&E) Team programs are funded through the Institute for Transportation Studies (ITS) of the University of California, Berkeley. Both programs have received national recognition for their excellence.

With the advancements being made in data automation and the increased number of software packages related to traffic engineering and mapping, the scope of engineering in the OTS grant program has changed markedly from just a few years ago. As the concept of GIS continues to mature, the delineation between traffic records and traffic engineering is rapidly blurring and will likely disappear completely. Traffic record systems are becoming increasingly comprehensive, providing data storage and retrieval mechanisms that apply to both engineering and enforcement, as well as to other interested organizations. For this reason, many grants may appear to be traffic record grants when they are in fact, engineering grants. Since both disciplines may be using the same computerized database, the degree to which the grant requires applied engineering fieldwork is used to distinguish between traffic records and traffic engineering.

III. TASKS

TASK 1 - PROGRAM DEVELOPMENT AND ADMINISTRATIVE COORDINATION

This task provides for the necessary staff time and expenses incurred by OTS that are directly related to the planning, development, coordination, monitoring, auditing, and evaluation of grants within this program area, and the preparation of the 2008 Highway Safety Plan. Funding is also provided in this task for the printing of brochures and pamphlets, distributing literature and media materials developed through successful grants, or obtained from other sources. Assistance is also provided under this task for individuals to attend and participate in technology transfer workshops, training sessions, or educational meetings and conferences.

TASK 2 - ELECTRONIC ENGINEERING DATA SYSTEMS

Grants funded in this task provide local agencies with the ability to collect, extract, and manipulate traffic collision and citation data. Utilizing these high-powered data systems will enable these agencies to conduct thorough collision/citation analyses that will allow for statistically meaningful and technically accurate graphical representations. These systems will be used to track data throughout the locality to evaluate high collision/citation locations upon which to base mitigation efforts or other capital improvement decisions. In addition, these systems will also allow for information sharing between and amongst local jurisdictions along shared boundaries to effectively identify and classify collisions or other traffic related data by geographical reference points. One grant will be continued into 2008, and one new grant will be initiated under this task. However it should be noted that these systems are also included within other projects to provide a comprehensive local approach to traffic safety.

Grant #	Fund	Agency	FFY 2008 Funds
RS0407	402	Los Angeles	\$83,178
RS0803	406	Mountain View	\$41,082

TASK 3 - ROADWAY IMPROVEMENT PROGRAM

Grants funded in this task enable local agencies to implement minor improvements in the roadways, as authorized by FHWA, including the installation of traffic count programs. No grants have been funded in this task for fiscal year 2008.

TASK 4 - TRAFFIC ENGINEERING EXPERTISE

Grants funded in this task enable agencies to better identify problems, suggest alternative solutions, and identify future needs by providing the traffic engineering expertise required. It also provides a professional engineer to the UC Berkeley Enforcement and Engineering Analysis Team, to conduct at least 60 annual administrative evaluations of local traffic engineering and enforcement programs. Funding for these grants is reflected in program area PT, Task 4.

402

**PT0829 - UNIVERSITY OF CALIFORNIA, BERKELEY
TRAFFIC SAFETY EVALUATIONS FOR CALIFORNIA COMMUNITIES**

The Institute of Transportation Studies, Technology Transfer Program's goal is to reduce the number and severity of crashes on local streets and highways in California by providing free expert technical assistance to local enforcement and engineering staff. They will improve local traffic safety programs efficiency and effectiveness and recommend solutions for high crash sites. More than thirty (30) community evaluations will be performed. University staff oversee and evaluate performance of teams, market the program to cities and counties, and disseminate appropriate best practices. (\$518,781)

TASK 5 - EDUCATION AND TRAINING

Grants funded in this task provide training for enhanced roadway safety. Funds are also obligated for the training of persons responsible for collision investigation and analysis.

163

**RS0702 - CALIFORNIA DEPARTMENT OF TRANSPORTATION
PUBLIC HIGHWAY SAFETY PUBLIC AWARENESS CAMPAIGN**

The California Department of Transportation will implement a statewide public awareness campaign to reduce the number of collisions, injuries and deaths involving motorist and workers in highway work zones. This will be accomplished by educating and making the motoring public aware of the risks to themselves and their passengers through primetime television, Hispanic educational outreach, and innovative media strategies. (\$2,000,500)

402

**RS0802 – UNIVERSITY OF CALIFORNIA, BERKELEY
WORK ZONE SAFETY TRAINING**

This project helps reduce number and severity of crashes at/near roadway work zones by training construction and maintenance crews how to safely plan, install or remove, and operate effective work zone traffic controls that minimize potential for vehicle conflicts, guard against pedestrian hazards and optimize worker protections. The project will update and revise the existing two-day training class entitled "Safety and Traffic Control Plans for Work Zones" to host agencies on request up to 60 times during the project period, recruit and train instructor teams, evaluate effectiveness, and market training via print, website and e-mail. (\$193,500)

TASK 6 - EQUIPMENT

Grants funded in this task provide equipment for grantees to reduce the number of fatal and injury collisions in their jurisdiction. The hardware provided under this task tends to be specialized and designed to address an identified traffic safety issue in the jurisdiction. Including but not limited to speed trailers, speed feedback signs and changeable message signs.

Grant #	Fund	Agency	FFY 2008 Funds
RS0604	157	Fairfield	\$0
RS0801	402	San Leandro	\$126,000

TASK 7 - EVALUATION

There are currently no grants planned or continued under this task.

TASK 8 - INFRASTRUCTURE IMPROVEMENT

The Caltrans Highway Safety Improvement Program (HSIP) includes all grants in which the primary purpose is to reduce the number and severity of collisions on California highways. Grants may range from spot improvements such as new signal installations to statewide systematic improvements to "Clean Up the Roadside Environment (CURE)".

164HE

HAZARD ELIMINATION PROJECTS

The following are hazard elimination grants scheduled for 2008 and funded through the California Department of Transportation (Caltrans).

- Upgrade and install metal beam guardrails and end treatments in the County of Los Angeles (\$5,435,587)
- Install icy curve warning system in the County of Plumas (\$239,135)
- Install guardrail/remove trees and shrubs within 30 feet of the edge of traveled way (\$490,624)
- Install concrete barrier in the City of Los Angeles (\$573,334)
- Install chain link railing in the City of Los Angeles (\$721,202)
- Install chain link railing in the City of Commerce (\$282,000)
- Install metal beam guardrail/end treatment and widen shoulder in the County of Ventura (\$350,000)
- Relocate and signalize intersection in the County of Butte (\$4,150,000)

- Pedestrian activated crosswalk signals in the Cities of Redondo Beach and Venice (\$611,000)
- Install metal beam guardrail in the City of Simi Valley (\$815,000)
- Install metal beam guardrail in the City of Santa Monica (\$790,000)
- Install metal beam guardrail in the City of Oxnard (\$540,000)
- Install metal beam guardrail in the County of Los Angeles (\$750,000)
- Construct/extend truck climbing lane in the County of Nevada (\$3,720,500)
- Upgrade metal beam guardrail end treatments in the Counties of Sacramento, Yolo, Yuba and Placer (\$2,200,000)
- Upgrade median barrier in the County of Stanislaus (\$3,020,000)
- Shoulder widening in the County of Lake (\$9,155,000)
- Install metal beam guardrail/end treatments and crash cushions in the County of Los Angeles (\$3,062,000)
- Install/upgrade concrete barrier, end treatments and crash cushions in the County of San Diego (\$6,600,000)
- Install metal beam guardrail in the County of Kern (\$1,171,000)
- Relocate/shield objects in the gore area in the County of Los Angeles (\$1,000,000)
- Upgrade median barrier in the County of Ventura (\$4,000,000)
- Install/upgrade metal beam guardrail in Sierra County (\$1,400,000)